REMARKS

Claims 1 through 13 are pending in this application. Claims 1, 5, and 6 are amended herein. Claim 13 is added herein. Support for the amendments to the claims may be found in the claims as originally filed. Reconsideration is requested based on the foregoing amendment and the following remarks.

Objections to the Specification:

The Specification has been updated to show the status of the parent applications. Withdrawal of the objection is earnestly solicited.

Objections to the Claims:

Claim 5 was objected to for an informality. Claim 5 has been amended as suggested by the Examiner. The Examiner's suggestion is appreciated. Withdrawal of the objection is earnestly solicited.

Claim Rejections - 35 U.S.C. § 112:

Claims 1 through 6 were rejected under 35 U.S.C. § 112, second paragraph, as indefinite. Claims 1, 5, and 6 have been amended to make them more definite. In particular, claim 1 has been amended to recite that the characteristics given in step (d) are characteristics of the microorganism.

With respect to claim 2, the Office Action appears to be making a distinction between "grown" and "cultured". The term "cultured", however, may be broad enough to include "maintained". In one embodiment, the microorganism may not be replicated intentionally to a greater number of microorganisms. In another embodiment, the microorganism may replicate at

a very low level inherently. In neither case, however, would increasing the number of individual microorganisms be strictly necessary to practice the claimed invention.

Note that in the cited references, one generally wants to (and often needs to) "grow" the microorganism to produce many microorganisms for easy manipulation.

As for Claim 3, Claim 1 has been amended so that step (c), the "treating...to produce fragments..." does not require the use of restriction enzymes. The step may be performed by mechanical shearing or by other cleaving enzymes which cleave single stranded DNA, single stranded RNA and/or double stranded RNA. Techniques for forming fragments from a long nucleic acid are well known in the art.

Claim 5 may be performed after step (b) or step (c). Because claim 1 has been amended, claim 5 now corresponds to a method being performed after either step in claim 1. Withdrawal of the rejection is earnestly solicited.

Claim Rejections - 35 U.S.C. § 102:

Claims 1 , 3, and 6 were rejected under 35 U.S.C. § 102(b) as anticipated by Sambrook et al., (Molecular Cloning, A Laboratory Manual, Second Edition, pages 1.25-1.30, 1989) The rejection is traversed to the extent it would apply to the claims as amended.

Amended claim 1 recites, in pertinent part:

"A said centrifuge tube comprising an upper region, a middle region and a lower region wherein an inner diameter of said upper region is larger than an inner diameter of said middle region; and, either an inner diameter of said middle region is larger than an inner diameter of said lower region or the inner diameter of the middle region and the lower region are capable of holding an air bubble between aqueous liquids in the middle region and the lower region."

Sambrook neither teaches, discloses, nor suggests a centrifuge tube comprising an upper region, a middle region and a lower region, contrary to the assertion at paragraph 12 of the Office Action. The microfuge tube shown in Figs. 1.2 and 1.3, rather, has at *most* two regions, only one of which may be said to have any specific diameter, since the other one is conical.

Since the case law and M.P.E.P. § 2131 require a reference to teach every element of a claim to anticipate the claim, amended claim 1 is submitted to be allowable. Withdrawal of the rejection of amended claim 1 is earnestly solicited.

Claims 3 and 6 depend from amended claim 1 and add further distinguishing elements. Claims 3 and 6 are thus also submitted to be allowable. Withdrawal of the rejection of claims 3 and 6 is also earnestly solicited.

Rejections under 35 U.S.C. § 103:

Claim 4 is rejected under 35 U.S.C. § 103 as being unpatentable over Sambrook in view of Maniatis et al., (Molecular Cloning, A Laboratory Manual, page 161, 1982) The rejection is traversed. Reconsideration is earnestly solicited.

Claim 4 depends from amended claim 1 and adds additional distinguishing elements. Sambrook neither teaches, discloses, nor suggests a centrifuge tube comprising an upper region, a middle region and a lower region, as discussed above with respect to amended claim 1. Maniatis shows no centrifuge tube at all, and thus cannot make up for the deficiencies of Sambrook with respect to amended claim 1. Claim 4 is thus also submitted to be allowable. Withdrawal of the rejection of claim 4 is earnestly solicited.

Claim 6 is rejected under 35 U.S.C. § 103 as being unpatentable over Sambrook in view of Burgoyne, U.S. 5,756,126. The rejection is traversed. Reconsideration is earnestly solicited.

Amended claim 6 depends from amended claim 1 and adds additional distinguishing elements. Sambrook neither teaches, discloses, nor suggests a centrifuge tube comprising an upper region, a middle region and a lower region, as discussed above with respect to amended claim 1. Burgoyne shows no centrifuge tube at all, and thus cannot make up for the deficiencies of Sambrook with respect to amended claim 1. Amended claim 6 is thus also submitted to be allowable. Withdrawal of the rejection of amended claim 6 is earnestly solicited.

Conclusion:

Accordingly, in view of the reasons given above, it is submitted that all claims 1 through 13 are allowable over the cited references. Since the objections to the specification and claims have been addressed and the claims have been amended to overcome the rejections based on 35 U.S.C. § 112, second paragraph, it is submitted that all of claims 1 through 13 are now allowable. Allowance of all claims 1 through 13 and of this entire application are therefore respectfully requested.

<table>
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Attachments: Marked-Up Copies of Amendments

OIPE JC16
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Specification: Version with markings to show changes made

[0001] The present application is a continuation application of U.S. patent application Serial No. 09/666,836 filed 21 September 2000, which is a divisional of U.S. patent application Serial No. 09/571,274, filed 16 May 2000, now U.S. Patent No. 6,340,570, which is a divisional of U.S. patent application Serial No. 09/265,541, filed 9 March 1999, now U.S. Patent No. 6,254,834, each incorporated herein by reference. The present application is further related to U.S. provisional patent application Serial No. 60/077,472, filed 10 March 1998, incorporated herein by reference, and claims priority thereto under 35 U.S.C. §119(e).

Amended Claims: Version with markings to show changes made

1 (amended). A method for determining a characteristic of a microorganism, wherein said method comprises the steps of:

(a) concentrating said microorganism which comprises the steps of:

(i) adding a sample containing said microorganism to a centrifuge tube;

(ii) centrifuging said sample in said centrifuge tube to concentrate said microorganism, said centrifuge tube comprising an upper region, a middle region and a lower region wherein an inner diameter of said upper region is larger than an inner diameter of said middle region; and, either an inner diameter of said middle region is larger than an inner diameter of said lower region or the inner diameter of the middle region and the lower region are capable of holding an air bubble between aqueous liquids in the middle region and the lower region;

(b) extracting nucleic acid from said concentrated microorganism to produce extracted nucleic acids;

(c) treating nucleic acid derived from said concentrated microorganism [with one or more restriction enzymes] to produce fragments of nucleic acid; and

(d) determining one or more of the following <u>characteristics of the microorganism</u>; (1) the number of said fragments of nucleic acid, (2) the lengths of at least one of said fragments of nucleic acid, (3) the mass of at least one of said fragments of nucleic acid or (4) at least a partial sequence of at least one of said fragments of nucleic acid.

5 (amended). The method of claim 1 further comprising:

immobilizing said extracted nucleic acids or said nucleic acid derived from said concentrated microorganism on a solid support to produce immobilized nucleic acid, and

treating said immobilized nucleic acid with one or more restriction enzymes to produce at least one fragment of <u>said</u> nucleic acid.

6 (amended). The method of claim 1, wherein said nucleic acid from said concentrated microorganism is not amplified before said treating [with one or more restriction enzymes] nucleic acid.